

Learn the Analysis of a D-Latch flip-flop with Deeds

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RESEARCH OBJECTIVE

A D Flip Flop (also known as a D Latch or a 'data' or 'delay' flip-flop) is a type of flip flop that tracks the input, making transitions with match those of the input D. The D stands for 'data'; this flip-flop stores the value that is on the data line. It can be thought of as a basic memory cell.

D Latch flip-flop

many applications, where only SET and RESET conditions of the latch are required. In these applications, we can use inputs (S and R) which are always the complement of each other. This can be designed by a single input (S) to the latch and the R input achieved by inverting this S. This single input is called data input and it is labeled with D. This is why this type of single input Flip flop is known as a D-Flip Flop or D Latch.(Rajah 1)

Gated D Latch

There are many applications where separate S and R inputs not required. In these cases by creating D flip-flop we can omit the conditions where $S = R = 0$ and $S = R = 1$.

In D flip-flop if $D = 1$ then $S = 1$ and $R = 0$ hence the latch is set on the other hand if $D = 0$ then $S = 0$, and $R = 1$ hence the latch is reset.

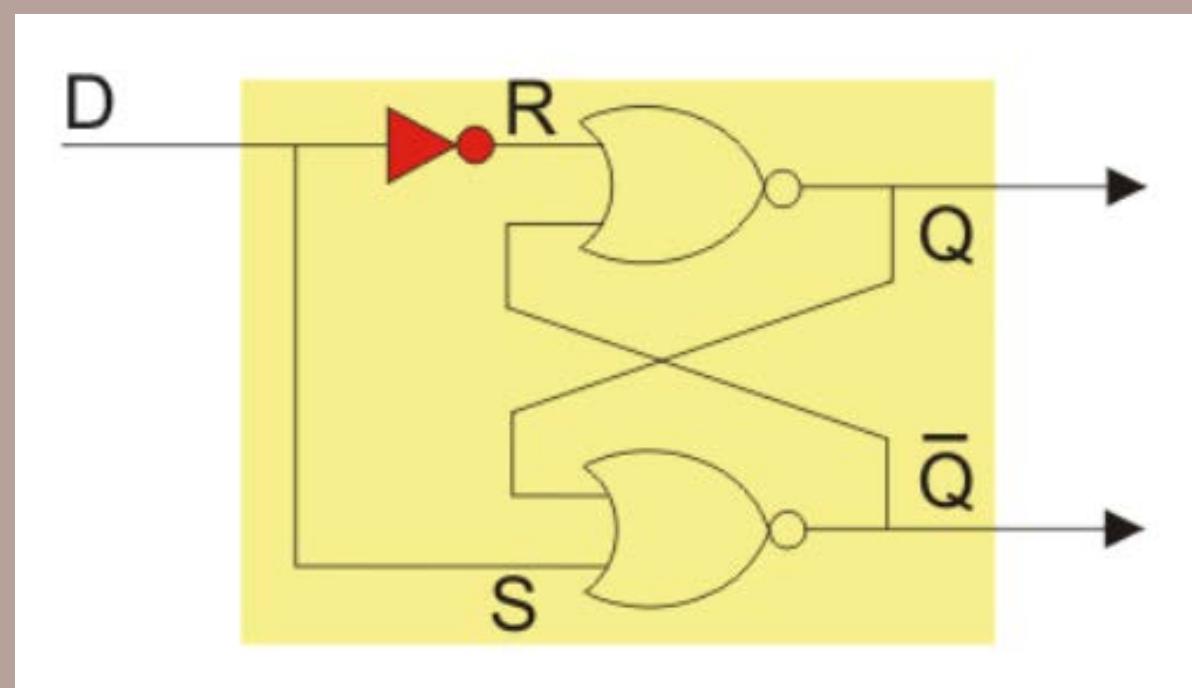
This is known as a Gated D Latch.

when $D = 1$ and $EN = 1$ the gated latch D flip-flop is ENABLE and SET when $D = 0$ and $EN = 1$ the latch is ENABLE and RESET but when $EN = 0$ the latch is DISABLE no question of SET REST. That means at $EN = 0$, any change in input D does not affect the output (No Change Condition).

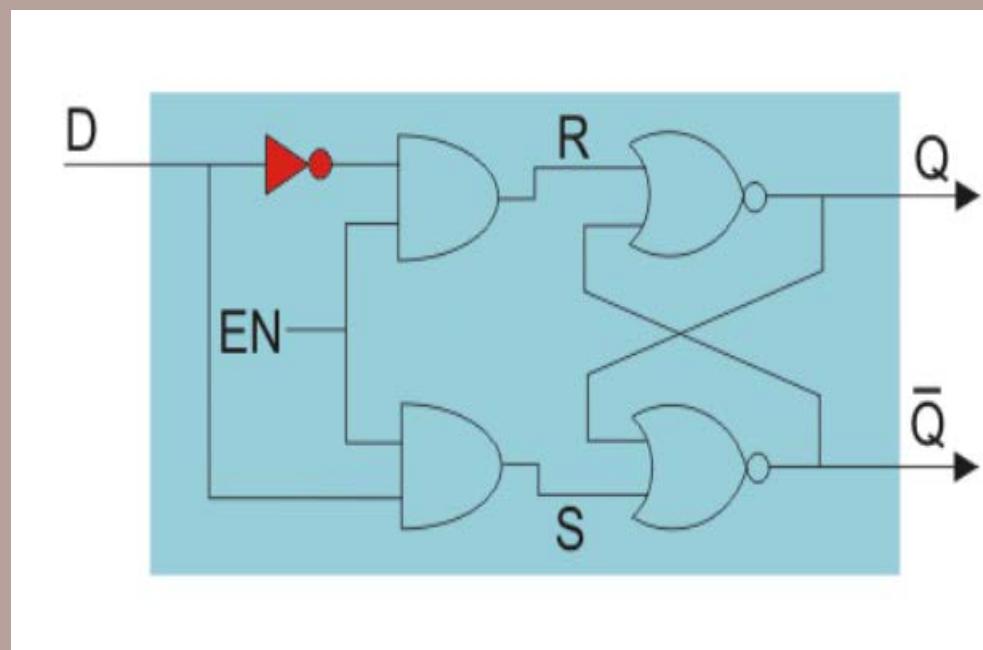
SET means output $Q = 1$ and RESET means $Q = 0$ so $Q = D$ or output follows input when EN is High and this is the reason for which it is that a LOW D input makes Q Low

REFERENCES

- [1] Manual Pengguna, (2022). Aplikasi Pendidikan dan Reka Bentuk Elektronik Digital (S. Widjarto, Ed. & Trans.; 1st ed.). International Community Forum (ICF).
- [2] <https://www.digitalelectronicsdeeds.com/>
- [3] <https://www.electrical4u.com/d-flip-flop-or-d-latch/>



Rajah 1



Rajah 2

EN	D	Q	Q ₊₁	STATE
1	0	0	0	RESET
1	0	1	0	SET
1	1	0	1	SET
0	0	0	0	NC
0	0	1	1	NC
0	1	0	0	NC
0	1	1	1	NC

Rajah 3.



INTERNATIONAL COMMUNITY FORUM (ICF)

